Avinashilingam Institute of Home Science and Higher education for Women,
(Deemed to be University) Coimbatore -641043

Master's Degree Examination November 2018
III Semester

Class: II PG **Max Marks: 60**
Major: Biochemistry **Time: 3 Hours**

17MBCC16- Genetic Engineering

Part A **10 x ½ =5**

Choose the correct answer

1. Single stranded unpaired extensions formed by restriction enzyme upon cleavage is called as

   (a) Blunt ends (b) flush ends (c) Sticky ends (d) rigid ends

2. The extra chromosomal, self-replicating, closed, double stranded and circular DNA molecule is generally termed as

   (a) Chromosome (b) Plasmid (c) Genomic DNA (d) Bacteriophage

3. Which of the statement is true for pBR322?

   (a) It contains only an ampicillin resistance gene

   (b) It contains both ampicillin resistant and tetracycline resistant gene

   (c) The cloning site is present only in the ampicillin resistant gene

   (d) It is a natural vector

4. The size of the Ti plasmid is around _____

   (a) Less than 100 kb (b) More than 200 kb (c) Less than 50 kb (d) More than 75 kb

5. Introduction of DNA into cells by exposing to high voltage electric pulse is

   (a) electrofusion (b) electrofision (c) electrolysis (d) electroporation

6. Which of the following statements are true for agrobacterium mediated gene transfer?

   (a) Vir genes are essential for gene transfer

   (b) T-DNA borders are essential for gene transfer

   (c) both a and b

   (d) none of these

7. The set of DNAs generated by using random primers in a PCR reaction is called

   (a) RAPD (b) RFLP (c) AFLP (d) in situ hybridization

8. Process of determining precise order of nucleotides within DNA is

   (a)DNA replication (b) denaturation (c) blotting (d) DNA sequencing

9. The insulin prepared through genetic engineering is called

   (a) Human insulin (b) microbial insulin (c) Bio insulin (d) Humulin

10. Inability to replicate, in certain viruses, provides an ultimae advantage in the

    (a) Gene therapy (b) Drug therapy (c) Physiotherapy (d) Chemotherapy

Part B 5 x 4 = 20

Answer ALL questions

Each answer should not exceed 200 words or one page

11. a) Give a note on i) Nucleases ii) Topoisomerases.

(Or)

b) List out the importance of gene cloning.

12. a) Discuss about the applications of pBR322 vector.

(Or)

b) Write a note on cosmids.

13. a) Explain the Electroporation technique.

(Or)

b) Describe the technique of Agrobacterium mediated gene transfer.

14.a) How to construct the gene library?

(Or)

b) Brief a note on the steps involved in PCR.

15.a) Enumerate on insulin production by genetic engineering technique.

(Or)

b) Comment on Antisense RNA technology.

Part C 5 x 7 = 35

Answer ALL questions

Each answer should not exceed 600 words or three pages

16. a) How are Restriction enzymes performing digestion and restriction mapping performed?

(Or)

b) Explain about the isolation and purification of Total cell DNA and plasmid DNA.

17. a) Write about the lytic and Lysogenic life cycle of bacteriophages M_{13} and λ.

(Or)

b) Elaborate on Ti plasmid and Ri plasmid.

18. a) Explain any two methods of transgenic animals production.

(Or)

b) Write an essay on IPR and its types.

19. a) Discuss on the technique and application of Blotting techniques.

(Or)

b) Describe the stages in DNA finger printing and mention its applications.

20.a) List out the applications of genetic engineering in the field of medicine.

(Or)

b) Elaborate on the production of insect and virus resistant plant.